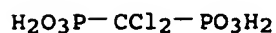
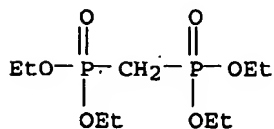


IT 10596-23-3P, (Dichloromethylene)diphosphonic acid
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation and conversion to carbonyldiphosphonate)
 RN 10596-23-3 HCAPLUS
 CN Phosphonic acid, (dichloromethylene)bis- (9CI) (CA INDEX NAME)

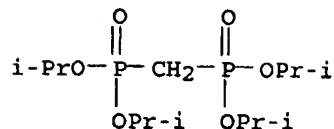


L17 ANSWER 18 OF 28 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1989:407503 HCAPLUS
 DOCUMENT NUMBER: 111:7503
 TITLE: Synthesis of α -halogenated methanediphosphonates
 AUTHOR(S): McKenna, Charles E.; Khawli, Leslie A.; Ahmad, Wan
 Yaacob; Pham Phuong; Bongartz, Jean Pierre
 CORPORATE SOURCE: Dep. Chem., Univ. South. California, Los Angeles, CA,
 90089-0744, USA
 SOURCE: Phosphorus and Sulfur and the Related Elements (1988),
 37(1-2), 1-12
 CODEN: PREEDF; ISSN: 0308-664X
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 111:7503
 AB α -Halo-substitution of methanediphosphonate (MDP) anions provides
 MDP derivs. XX1MDP (X = H, F, Cl, Br; X1 = F, Cl, Br) with modified
 acid-base, steric and other properties. These compds. are conveniently
 made from the corresponding α -halogenated XX1MDP esters
 (RO)2P(O)CXX1P(O)(OR)2. Detailed procedures are given for synthesis of
 R4XX1MDP (R = CHMe2, Et, Me. NMR data (1H, 31P, 13C, 19F) are presented
 for the products obtained. The XX1MDP acids (X,X1 = H, Cl; Cl, Cl; H, Br;
 Br, Br; F, Cl; F, Br; Cl, Br) were prepared by HCl hydrolysis of a
 corresponding ester and characterized as tris(dicyclohexylammonium) salts
 by elemental analyses and 31P NMR.
 IT 1660-94-2 1660-95-3 16001-93-7
 78715-56-7 78715-57-8
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (chlorination of, with sodium hypochlorite)
 RN 1660-94-2 HCAPLUS
 CN Phosphonic acid, methylenebis-, tetraethyl ester (9CI) (CA INDEX NAME)



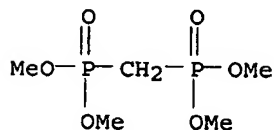
RN 1660-95-3 HCAPLUS
 CN Phosphonic acid, methylenebis-, tetrakis(1-methylethyl) ester (9CI) (CA

INDEX NAME)



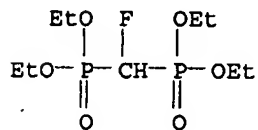
RN 16001-93-7 HCAPLUS

CN Phosphonic acid, methylenebis-, tetramethyl ester (9CI) (CA INDEX NAME)



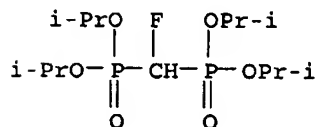
RN 78715-56-7 HCAPLUS

CN Phosphonic acid, (fluoromethylene)bis-, tetraethyl ester (9CI) (CA INDEX NAME)



RN 78715-57-8 HCAPLUS

CN Phosphonic acid, (fluoromethylene)bis-, tetrakis(1-methylethyl) ester (9CI) (CA INDEX NAME)

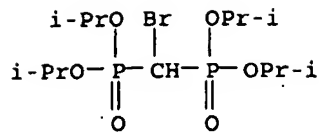


IT 10596-20-0P 20107-67-9P 28845-79-6P
50870-71-8P 119351-13-2P 121151-56-2P
121151-57-3P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP
(Preparation); RACT (Reactant or reagent)
(preparation and hydrolysis of)

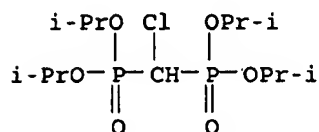
RN 10596-20-0 HCAPLUS

CN Phosphonic acid, (bromomethylene)bis-, tetrakis(1-methylethyl) ester (9CI) (CA INDEX NAME)



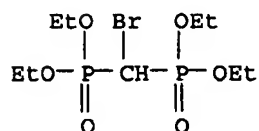
RN 20107-67-9 HCAPLUS

CN Phosphonic acid, (chloromethylene)bis-, tetrakis(1-methylethyl) ester (9CI) (CA INDEX NAME)



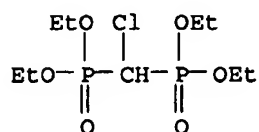
RN 28845-79-6 HCAPLUS

CN Phosphonic acid, (bromomethylene)bis-, tetraethyl ester (9CI) (CA INDEX NAME)



RN 50870-71-8 HCAPLUS

CN Phosphonic acid, (chloromethylene)bis-, tetraethyl ester (9CI) (CA INDEX NAME)



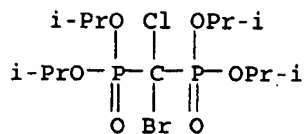
RN 119351-13-2 HCAPLUS

CN Phosphonic acid, (bromofluoromethylene)bis-, tetrakis(1-methylethyl) ester (9CI) (CA INDEX NAME)



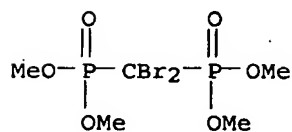
RN 121151-56-2 HCAPLUS

CN Phosphonic acid, (bromochloromethylene)bis-, tetrakis(1-methylethyl) ester (9CI) (CA INDEX NAME)



RN 121151-57-3 HCAPLUS

CN Phosphonic acid, (dibromomethylene)bis-, tetramethyl ester (9CI) (CA INDEX NAME)



IT 121151-58-4P 121151-59-5P 121151-60-8P

121151-61-9P 121151-62-0P 121151-63-1P

121151-64-2P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

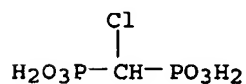
RN 121151-58-4 HCAPLUS

CN Phosphonic acid, (chloromethylene)bis-, compd. with N-cyclohexylcyclohexanamine (1:2) (9CI) (CA INDEX NAME)

CM 1

CRN 87591-00-2

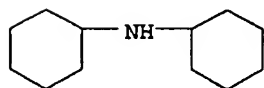
CMF C H5 Cl O6 P2



CM 2

CRN 101-83-7

CMF C12 H23 N

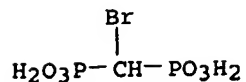


RN 121151-59-5 HCAPLUS

CN Phosphonic acid, (bromomethylene)bis-, compd. with N-cyclohexylcyclohexanamine (1:3) (9CI) (CA INDEX NAME)

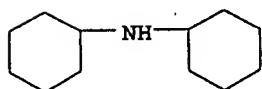
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CRN 10596-21-1
CMF C H5 Br O6 P2



CM 2

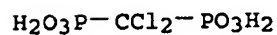
CRN 101-83-7
CMF C12 H23 N



RN 121151-60-8 HCAPLUS
CN Phosphonic acid, (dichloromethylene)bis-, compd. with N-cyclohexylcyclohexanamine (1:3) (9CI) (CA INDEX NAME)

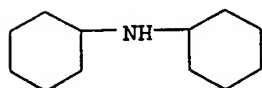
CM 1

CRN 10596-23-3
CMF C H4 Cl2 O6 P2



CM 2

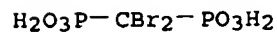
CRN 101-83-7
CMF C12 H23 N



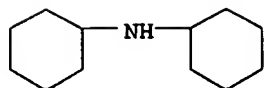
RN 121151-61-9 HCAPLUS
CN Phosphonic acid, (dibromomethylene)bis-, compd. with N-cyclohexylcyclohexanamine (1:3) (9CI) (CA INDEX NAME)

CM 1

CRN 10596-26-6
CMF C H4 Br2 O6 P2



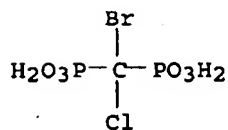
CM 2

CRN 101-83-7
CMF C12 H23 N

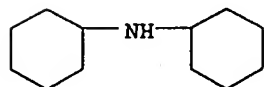
RN 121151-64-2 HCAPLUS

CN Phosphonic acid, (bromochloromethylene)bis-, compd. with
N-cyclohexylcyclohexanamine (1:3) (9CI) (CA INDEX NAME)

CM 1

CRN 111863-47-9
CMF C H4 Br Cl O6 P2

CM 2

CRN 101-83-7
CMF C12 H23 N

IT 10596-22-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP
(Preparation); RACT (Reactant or reagent)
(preparation, hydrolysis, and reductive dechlorination of)

RN 10596-22-2 HCAPLUS

CN Phosphonic acid, (dichloromethylene)bis-, tetrakis(1-methylethyl) ester
(9CI) (CA INDEX NAME)